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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/088,123 | 03/14/2002 | Andrea Casini | 018765-9001 | 1043 |

7590 02/08/2006

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EXAMINER

CHO, UN C

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| ART UNIT | PAPER NUMBER |
|----------|--------------|

2687

DATE MAILED: 02/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/088,123

Applicant(s)

CASINI ET AL.

Examiner

Un C. Cho

Art Unit

2687

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-12 and 16-19 is/are rejected.
- 7) ☒ Claim(s) 6, 7 and 13-15 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 2, 4, 5, 8, 9 – 12 and 16 – 19 are rejected under 35 U.S.C. 102(e) as being anticipated by Kim et al. (US 2002/0003645 A1).

Regarding claim 1, Kim discloses a communications network, in particular for telephony comprising: at least one operator (base station controller, Fig. 2, 3); a plurality of remote units (BTS, Fig. 2, 14) designed to exchange signals with the operator and to exchange radio frequency signals with mobile terminals; an interface unit inserted between the operator and the remote units (Compact Transceiver System Controller, Fig. 2, 18), the interface unit having at least one input for receiving signals from the remote units and at least one output for sending signals to the remote units (OL1, OL2, ... OLn, Fig. 2), the interface unit also being designed to exchange signals with the operator (E1/T1, Fig. 2); a first transmission support for connecting the interface unit to the remote units (OL1, OL2, ... OLn, Fig. 2), the first transmission support being designed to support a main signal, the first transmission support having a first end connected to the

interface unit input and at least a second end connected to the interface unit output (E1/T1 and OL1, OL2, ... OL_n connected to the interface unit input and output) (Kim, Page 2, Paragraph 0023, line 1 through Paragraph 0025, line 13), the main signal consisting of a plurality of secondary signals, each identified by a preset parameter value, each of the remote units receiving said main signal and being designed to process a secondary signal intended for it, each of the remote units being able to select at least one secondary signal intended for it from said main signal according to the preset parameter value (Kim, Page 3, Paragraph 0029, line 1 through Paragraph 0032, line 27).

Regarding claim 2, Kim discloses that the preset parameter is a wavelength, the remote units sending to and receiving from the interface unit signals at the wavelength associated with them (Kim, Page 2, Paragraph 0026, line 1 through Page 3, Paragraph 0028, line 11).

Regarding claim 4, Kim discloses that the first transmission support comprises an optic fiber support (Optical Links, OL1, OL2, ... OL_n), the main signal being an optical signal propagating from the second end to the first end (Kim, Page 2, Paragraph 0026, line 1 through Page 3, Paragraph 0028, line 11).

Regarding claim 5, Kim discloses wherein each remote unit (Compact BTS, Fig. 6, 89) comprises a signal transmission block (forward signal processing section, Fig. 6, 110) connected to the first transmission support for picking up at least one secondary signal from the main signal to be transmitted in the DL; a signal reception block (reverse signal processing section, Fig. 6, 100)

connected to the first transmission support for adding at least one signal received in the UL to the main signal (Kim, Page 3, Paragraph 0034, lines 1 – 20 and 22 – 29); an antenna (Fig. 6, 94) attached to the signal transmission block and to the signal reception block for transmitting RF signals to the mobile terminals and for receiving RF signals from the mobile terminals (Kim, Page 3, Paragraph 0034, lines 20 – 22).

Regarding claim 8, Kim discloses wherein the interface unit (Compact BTS controller, Fig. 3, 18) comprises a signal transmission circuit (Tx, Fig. 3, 21) connected to the output and connected to the second end of the first transmission support, the signal transmission circuit picking up signals from the operator and sending them to the remote units; a signal reception circuit (Rx, Fig. 3, 22) connected to the input and connected to the first end of the first transmission support, the signal reception circuit receiving signals from the remote units and transmitting them to the operator (Kim, Page 2, Paragraph 0026, line 1 through Page 3, Paragraph 0028, line 11).

Regarding claim 9, Kim discloses wherein the signal transmission circuit comprises a first routing matrix (group of elements) with at least one input connected to the operator for receiving a signal from the operator (Compact BTS controller is connected to the BSC) and two or more outputs for sending electrical signals; a first electro-optical converter unit (E/O, Fig. 3, 29) connected to the outputs of the first routing matrix, for transforming the electrical signals from the first routing matrix into optical signals; a multiplexer (MUX, Fig. 3, 27) between

the first electro-optical converter unit and the second end of the first transmission support, for bundling and transferring the optical signals from the first electro-optical converter unit in the first transmission support (Kim, Page 2, Paragraph 0026, line 1 through Page 3, Paragraph 0028, line 11).

Regarding claim 10, Kim discloses wherein the signal reception circuit comprises a demultiplexer (DEMUX, Fig. 3, 28) connected to the first end of the first transmission support for receiving the main signal and having a plurality of outputs for sending optical signals; a second electro-optical converter unit (O/E, Fig. 3, 30) connected to the outputs of the demultiplexer for transforming the optical signals sent by the demultiplexer into electrical signals; a second routing matrix with two or more inputs connected to the second electro-optical converter unit and at least one output connected to the operator (Kim, Page 2, Paragraph 0026, line 1 through Page 3, Paragraph 0028, line 11).

Regarding claim 11, Kim discloses a communications network comprising at least one operator (base station controller, Fig. 2, 3); a first remote unit (BTS1, Fig. 2, 14) and at least a second remote unit (BTS2, Fig. 2, 14), the remote units being designed to exchange signals with the operator and to exchange radio frequency signals with the mobile terminals (BTS being able to exchange signals with the Compact BTS controller and to exchange radio frequency signals with MS); an interface unit inserted between the operator and the remote units (Compact Base Transceiver System Controller, Fig. 2, 18), the interface unit having at least one input for receiving signals from the remote units and at least

one output for sending signals to the remote units (OL1, OL2, ... OLn, Fig. 2), the interface unit also being designed to exchange signals with the operator (E1/T1, Fig. 2); a first transmission support for connecting the interface unit to the remote units (OL1, OL2, ... OLn, Fig. 2), the first transmission support being designed to support a main signal, the first transmission support having a first end connected to the interface unit input and at least a second end connected to the interface unit output (E1/T1 and OL1, OL2, ... OLn connected to the interface unit input and output), wherein the first remote unit has a first input directly connected to the interface unit output by the first transmission support and a first output (BTS1 is directly connected to the Compact BTS controller), the second remote unit having a first input connected to the first output of the first remote unit by the first transmission support and a first output directly connected to the interface unit input by the first transmission support (BTS2 is connected to BTS1, which is connected to the Compact BTS controller), the main signal propagating in the first transmission support from the second end to the first end (Kim, Page 2, Paragraph 0023, line 1 through Paragraph 0025, line 13 and Page 3, Paragraph 0029, line 1 through Paragraph 0031, line 16).

Regarding claim 12, Kim discloses wherein the first transmission support basically consists of an optic fiber loop passing through each remote unit, the main signal being an optical signal propagating in the loop from the first remote unit to the second remote unit (Kim, Page 2, Paragraph 0023, line 1 through Paragraph 0025, line 13).

Regarding claim 16, Kim discloses a plurality of operator, which can be connected to the remote units by means of the interface unit (BSC can be connected to BTS through the Compact BTS controller, Kim, Page 2, Paragraph 0023, line 1 through Paragraph 0025, line 13).

Regarding claim 17, the claim is interpreted and rejected for the same reason as set forth in claim 16.

Regarding claim 18, Kim discloses wherein a first remote unit has a first input directly connected to the interface unit output by the first transmission support and a first output (BTS1 is directly connected to the Compact BTS controller), a second remote unit having a first input connected to the first output of the first remote unit by the first transmission support and a first output directly connected to the interface unit input by the first transmission support (BTS2 is connected to BTS1, which is connected to the Compact BTS controller), the main signal propagating in the first transmission support from the second end to the first end (Kim, Page 2, Paragraph 0023, line 1 through Paragraph 0025, line 13).

Regarding claim 19, the claim is interpreted and rejected for the same reason as set forth in claim 12.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kim et al. in view of Koonen (US 6,674,966 B1).

Regarding claim 3, Kim as applied above does not specifically disclose wherein the secondary signals received from and sent to the interface unit by the remote units are bundled and preferably multiplexed by the interface unit according to the dense wave division multiplexing technique. In an analogous art, Koonen discloses that the secondary signals received from and sent to the interface unit by the remote units are bundled and preferably multiplexed by the interface unit according to the dense wave multiplexed by the interface unit according to the dense wave division multiplexing technique, in particular according to the semi-dense wave division multiplexing technique (the specific example given by Koonen is $N=4$ however, the optical fiber can carry a number of wavelengths ($N > 4$), thus, utilizing the dense wave division multiplexing technique, Koonen, Col. 7, lines 6 – 15). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to provide the technique of Koonen to the system of Kim in order to provide a reconfigurable wireless network that minimizes the complexity of the base stations.

Allowable Subject Matter

5. Claims 6, 7 and 13 – 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claim 6, Kim in view of Koonen as applied above discloses electro-optical converter, for converting the optical signal from the interface unit into an electrical signal and a RF filter for filtering the signals from the converter.

However, Kim in view of Koonen as applied above either alone or in combination fails to disclose wherein the signal transmission block comprises an optical filter element connected to the first transmission support for selecting within the main signal, the secondary signal characterized by the parameter value associated with the remote unit; preferably a first equalizer block connected downstream of the optical filter element; a first electro-optical converter, for converting the optical signal from the interface unit into an electrical signal; a first amplifier block connected to the first electro-optical converter; a first RF filter for filtering the signals from the first converter.

Regarding claim 7, Kim in view of Koonen as applied above discloses RF filter for filtering a signal from the antenna, an amplifier connected to the RF filter, an electro-optical converter for converting an electrical signal from the RF filter into an optical signal.

However, Kim in view of Koonen as applied above either alone or in combination fails to disclose wherein the signal reception block comprises a

second RF filter for filtering a signal from the antenna; a second amplifier block connected to the second RF filter; a second electro-optical converter for converting an electrical signal from the second RF filter into an optical signal; a second equalizer block connected downstream of the second electro-optical converter; a signal insertion element for adding a signal received, characterized by the preset parameter value associated with the remote unit, to the main signal.

Regarding claim 13, Kim in view of Koonen as applied above either alone or in combination fails to disclose a second transmission support having a first end connected to the interface unit input and a second end connected to the interface unit output, for supporting an auxiliary signal substantially identical to the main signal, the auxiliary signal propagating in the second transmission support from the second end of the second transmission support to the first end of the second transmission support.

Response to Arguments

6. Applicant's arguments filed 11/14/2005 have been fully considered but they are not persuasive.

Regarding claim 1, the applicant presented the argument that the reference by Kim fails to teach "a plurality of remote units, each of which receive a main signal including a plurality of secondary signals, where each of the remote units are able to select at least one secondary signal intended for it from the main

signal". The examiner disagrees with the argument presented by the applicant. Kim clearly discloses a plurality of remote units (BTS1, BTS2, ... BTSn), each of which receive a main signal including a plurality of secondary signals (Kim, Page 3, Paragraph 0032, lines 1 – 13), where each of the remote units are able to select at least one secondary signal intended for it from the main signal (Kim, Page 3, Paragraph 0032, lines 13 – 27).

Regarding claim 11, Kim clearly discloses that the first transmission support having a first end connected to the interface unit input and at least a second end connected to the interface unit output (E1/T1 and OL1, OL2, ... OLn connected to the interface unit input and output), wherein the first remote unit has a first input directly connected to the interface unit output by the first transmission support and a first output (BTS1 is directly connected to the Compact BTS controller), the second remote unit having a first input connected to the first output of the first remote unit by the first transmission support and a first output directly connected to the interface unit input by the first transmission support (BTS2 is connected to BTS1, which is connected to the Compact BTS controller), the main signal propagating in the first transmission support from the second end to the first end (Kim, Page 2, Paragraph 0023, line 1 through Paragraph 0025, line 13 and Page 3, Paragraph 0029, line 1 through Paragraph 0031, line 16).

Therefore, the office action mailed on 7/14/2005 holds.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Un C. Cho whose telephone number is (571) 272-7919. The examiner can normally be reached on M ~ F 8:00AM to 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on (571) 272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Un C Cho
Examiner
Art Unit 2687

1/26/06 *UC*

[Signature]
2/13/06
LESTER G. KINCAID
SUPERVISORY PRIMARY EXAMINER